

Amendments To The Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (currently amended) Pump device ~~(1)~~ for the hydraulic actuation of a valve ~~(2)~~, in particular for a valve used in the production of crude oil or natural gas, such as a safety valve assigned to a pipeline or a tree, the pump device comprising:

~~with a piston-cylinder unit (3) from which hydraulic fluid (4) can be pumped in the direction of the valve (2) under pressure;~~ and

~~characterised in that~~

~~an electrical drive device (5) is movably connected to the piston (61) of the piston-cylinder unit (3) for its the alternating movement of the piston in the piston longitudinal direction (62) inside the cylinder (63).~~

2. (currently amended) Pump device according to claim 1,

~~wherein~~ characterised in that

~~the electrical drive device (5) exhibits~~ includes a spindle drive ~~(6)~~, a reduction gear ~~(7)~~, a spur gear ~~(8)~~ and at least one drive shaft ~~(21)~~ with at least one electric motor ~~(9)~~ rotating the drive shaft.

3. (currently amended) Pump device according to claim 1 ~~or 2~~,

~~wherein~~ characterised in that

~~the spindle drive (6) exhibits~~ includes a rotatable, but axially immovable spindle nut ~~(10)~~ and an axially movable threaded spindle ~~(11)~~.

4. (currently amended) Pump device according to claim 1 ~~one of the previous claims~~,

~~wherein~~ characterised in that

~~the threaded spindle (11) is releasably connected at its actuating end (12) to the piston (61).~~

5. (currently amended) Pump device according to claim 1 ~~one of the previous claims~~,

~~wherein~~ characterised in that

~~the spindle nut (10) is movably connected to the reduction gear (7) which is formed especially as a so-called harmonic drive gear (13).~~

6. (currently amended) Pump device according to claim 3~~one of the previous claims~~,
———~~wherein~~characterised in that
———the spindle nut-(10) is rotationally rigidly connected to a flexible, cup-shaped toothed sleeve-(14) of the harmonic drive gear-(13).

7. (currently amended) Pump device according to claim 6~~one of the previous claims~~,
———~~wherein~~characterised in that
———a rotating sleeve-(15), which is rotationally rigidly connected at one end-(16) to the toothed sleeve-(14) and at its other end-(17) to the spindle nut-(10), is arranged between the toothed sleeve-(15) and the spindle nut-(10).

8. (currently amended) Pump device according to claim 3~~one of the previous claims~~,
———~~wherein~~characterised in that
———a wave generator-(18) of the harmonic drive gear-(13) is rotationally rigidly connected to a first spur wheel-(19) of ~~a~~the especially helically toothed spur gear-(8) ~~and, whereby a second spur wheel-(20) is rotationally rigidly arranged on the drive shaft-(21) driven by the motor.~~

9. (currently amended) Pump device according to claim 8~~one of the previous claims~~,
———~~wherein~~characterised in that
———the spur gear-(8) is a double helical gear-(22).

10. (currently amended) Pump device according to claim 1~~one of the previous claims~~,
———~~wherein~~characterised in that
———the piston-(61) is adjustably supported in a piston chamber-(23) of the cylinder-(63) in the piston longitudinal direction-(62), whereby the piston chamber-(23) exhibits on its face side-(25) at least one suction and one discharge hole-(26, 27).

11. (currently amended) Pump device according to claim 10~~one of the previous claims~~,
———~~wherein~~characterised in that
———each hole-(26, 27) is assigned a non-return valve-(28, 29), which is subjected to a force opposite to the hydraulic fluid flow direction through the respective hole-(27, 28).

12. (currently amended) Pump device according to claim 1~~one of the previous claims~~,
———~~wherein~~characterised in that

——the holes ~~hole~~ (27, 28) is formed in a cylinder bottom plate (30), especially releasably fixed on the cylinder (63).

13. (currently amended) Pump device according to claim 10 ~~one of the previous claims~~,

——~~wherein~~characterised in that

——the suction hole (26) opens into an intermediate reservoir (31) of the pump device (1) with its end (32) facing away from the piston (61).

14. (currently amended) Pump device according to claim 13 ~~one of the previous claims~~,

——~~wherein~~characterised in that

——a feed pipe (33) for the hydraulic fluid opens into the intermediate reservoir (31).

15. (currently amended) Pump device according to claim 10 ~~one of the previous claims~~,

——~~wherein~~characterised in that

——the discharge hole (27) is connected to a discharge pipe (34) for the passage of the hydraulic fluid in the direction of the valve (2).

16. (currently amended) Pump device according to claim 10 ~~one of the previous claims~~,

——~~wherein~~characterised in that

——the discharge pipe (34) is brought out through the intermediate reservoir (31) from a pump housing (35).

17. (currently amended) Pump device according to claim 16 ~~one of the previous claims~~,

——~~wherein~~characterised in that

——a connecting pipe (36) branches from the discharge pipe (34) for the connection of an accumulator (37).

18. (currently amended) Pump device according to claim 17 ~~one of the previous claims~~,

——~~wherein~~characterised in that

——the accumulator (37) exhibits a pressure vessel in particular in the form of Belleville springs.

19. (currently amended) Pump device according to claim 17 ~~one of the previous claims~~,

——~~wherein~~characterised in that

——at least one branch pipe (39, 40) branches from the discharge pipe (34) and / or the

discharge hole-(27).

20. (currently amended) Pump device according to claim 19~~one of the previous claims~~,
———~~wherein~~characterised in that
———a first branch pipe-(39) leads to a pressure switch-(41).

21. (currently amended) Pump device according to claim 20~~one of the previous claims~~,
———~~wherein~~characterised in that
———on reaching a predetermined hydraulic fluid pressure in the first branch pipe₁-(39) the pressure switch-(41) outputs an electrical control signal for opening a safety valve-(42).

22. (currently amended) Pump device according to claim 21~~one of the previous claims~~,
———~~wherein~~characterised in that
———the safety valve-(42) is arranged in a second branch pipe-(40).

23. (currently amended) Pump device according to claim 21~~one of the previous claims~~,
———~~wherein~~characterised in that
———the safety valve-(42) is formed as a mechanically actuatable non-return valve-(43).

24. (currently amended) Pump device according to claim 21~~one of the previous claims~~,
———~~wherein~~characterised in that
———the electrical control signal can be transferred to an electric servomotor-(44), in particular a stepper motor, through which the safety valve-(42) can be mechanically actuated.

25. (currently amended) Pump device according to claim 24~~one of the previous claims~~,
———~~wherein~~characterised in that
———a pinion-(45) is drive-connected to the servomotor-(44), the said pinion-(45) being rotationally connected to a cam disc-(46), whereby an actuating plunger-(47) of the safety valve (42) is in contact with the cam disc-(46).

26. (currently amended) Pump device according to claim 25~~one of the previous claims~~,
———~~wherein~~characterised in that
———the cam disc-(46) ~~exhibits~~ includes at least an actuating cam-(48) along its circumference.

27. (currently amended) Pump device according to claim 25~~one of the previous claims~~,

———~~wherein characterised in that~~

———the actuating plunger-(47) is a roller plunger-(49), which with its roller-(50) is in rolling contact with a circumferential surface-(51) of the cam disc-(46).

28. (currently amended) Pump device according to claim 27~~one of the previous claims~~,

———~~wherein characterised in that~~

———the roller plunger-(49) is subject to spring pressure in the direction of the cam disc-(46).

29. (currently amended) Pump device according to claim 25~~one of the previous claims~~,

———~~wherein characterised in that~~

———the cam disc-(46) and / or the servomotor-(44) is assigned an automatic reverse rotation device-(52) for the reverse rotation of the cam disc-(46).

30. (currently amended) Pump device according to claim 29~~one of the previous claims~~,

———~~wherein characterised in that~~

———a wound or spiral spring-(53), similar to a clockwork spring, is assigned to the servomotor (44) as a reverse rotation device-(52), which can be transferred by actuation of the servomotor for opening the safety valve-(42) from an~~its~~ essentially destressed state into a stressed state.

31. (currently amended) Pump device according to claim 30~~one of the previous claims~~,

———~~wherein characterised in that~~

———the wound / spiral spring-(53) is drive connected on the rear side-(54) of the servomotor (44) facing away from the pinion-(45) to the servomotor.

32. (currently amended) Pump device according to claim 13~~one of the previous claims~~,

———~~wherein characterised in that~~

———a feedback pipe-(55) for the feedback of the hydraulic fluid when the safety valve-(42) is open runs from the safety valve to the intermediate reservoir-(31).

33. (currently amended) Pump device according to claim 1~~one of the previous claims~~,

———~~wherein characterised in that~~

———the pump device-(1) is of modular construction.

34. (currently amended) Pump device according to claim 25~~one of the previous claims~~,

———~~wherein characterised in that~~

——the cam disc (46) is rotationally supported on an external circumference (56) of the rotating sleeve (15).

35. (currently amended) Pump device according to claim 1 ~~one of the previous claims~~,
——~~wherein~~characterised in that
——a quick-release coupling device (57) is arranged between the pump housing (35) and athe hydraulic fluid supply pipe (58).

36. (currently amended) Pump device according to claim 1 ~~one of the previous claims~~,
——~~wherein~~characterised in that
——at least two servomotors (44, 59) are arranged redundantly with respect to one another.

37. (currently amended) Pump device according to claim 1 ~~one of the previous claims~~,
——~~wherein~~characterised in that
——the hydraulic fluid is an injection fluid, ~~in particular an inhibitor~~.

38. (currently amended) Pump device according to claim 3 ~~one of the previous claims~~,
——~~wherein~~characterised in that
——a position sensor (60) is assigned to at least the threaded spindle (11).

39. (new) Pump device according to claim 5, wherein the reduction gear is a harmonic drive gear.

40. (new) Pump device according to claim 24, wherein the electric servomotor is a stepper motor.

41. (new) Pump device according to claim 30, wherein the wound or spiral spring is a clockwork spring.

42. (new) Pump device according to claim 37, wherein the injection fluid is an inhibitor.

43. (new) Pump device for the hydraulic actuation of a safety valve on a pipeline or tree used in the production of hydrocarbons, the pump device comprising:

a body with a cylinder housing a piston such that hydraulic fluid can be pumped under pressure in the cylinder in the direction of the safety valve; and

an electrical drive device movably connected to the piston of the piston to move the piston in a longitudinal direction inside the cylinder upon the hydrocarbons reaching a predetermined pressure.